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FAMILIAL TAXA WITHIN THE CAPRELLIDEA
(CRUSTACEA: AMPHIPODA)

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Historically the Caprellidea have been divided into two families, the Cyamidae (whale lice) and the Caprellidae (skeleton shrimps). Due primarily to the recent discovery of *Caprogammarus*, an intermediate form between the caprellidean and gammaridean stocks, questions have been raised about this classical division.

Vassilenko (1968) proposed a new family, Paracercopidae (invalid name), for the genus *Cercops* and the following four subfamilies for the remaining genera of Caprellidae:

Phtisicinae Vassilenko—*Phtisica*, *Paraproto*, *Protogeton*, *Protoplesius*, *Pseudoproto*, *Protomima*, *Metaproto*.

Dodecadininae Vassilenko—*Dodecas*, *Dodecasella*, *Caprellina*, *Hircella*, *Pseudocaprellina*, *Liriarchus*, *Aeginoides*.

Aeginellinae Vassilenko—*Aeginella*, *Aeginina*, *Thorina*, *Protellina*, *Proaeginina*, *Parvipalpus*, *Parvipalpina*.

Caprellinae Dana—*Aciconula*, *Caprella*, *Caprellinoides*, *Deutella*, *Eugastraulax*, *Eupariambus*, *Hemiaegina*, *Liropus*, *Luconacia*, *Mayerella*, *Metaprotella*, *Monoliropus*, *Noculacia*, *Orthoprotella*, *Paedaridium*, *Paracaprella*, *Paradeutella*, *Pariambus*, *Paraprotella*, *Pedoculina*, *Piperella*, *Proliropus*, *Propodalirius*, *Protella*, *Protellopsis*, *Pseudaeginella*, *Pseudolirius*, *Pseudoprotella*, *Triantella*, *Triliropus*, *Triperopus*, *Tritella*.

McCain (1968, pp. 107-112) discussed the relationship between the suborders Gammaridea and Caprellidea and stated that a revision of familial taxa is necessary in the Caprellidea but that the mouthparts of many Caprellidae were too poorly known to allow such a revision at that time. Since then, numerous species have been examined. The mandible shows several

trends which roughly coincide with Vassilenko's conception of the subfamilies based primarily on degrees of pereopod reduction.

Four distinct groups of mandible types are evident in the Caprellidea as follows:

Group I. Mandible lacking molar, bearing numerous spines and accessory plates, and bearing a mandibular palp.

Group II. Mandible with molar, bearing 2 or 3 spines and a lacinia mobilis and incisor, and with a mandibular palp.

Group III. Mandible with molar, bearing 2 or 3 spines and a typical lacinia mobilis and incisor, and lacking a mandibular palp.

Group IV. Mandible without molar or palp.

Group I includes Vassilenko's concept of the Phtisicinae and Dodecadinæ and Group II the Aeginellinae. The Caprellinae, however, appear to be a heterogeneous assemblage of mandible types.

McCain (1968, p. 3) stated that the mouthparts undoubtedly reflect feeding habits of caprellids and thereby, to some extent, their niche. Since we lack a fossil record of the Caprellidea, the choice of mandible types as conservative characters seems justified. Lacking other obvious conservative characters, the use of mandible types to characterize higher taxa should be much more valid than the use of reduced segmentation of vestigial appendages.

I, therefore, propose the following familial classification of the Caprellidea:

PHTISICIDAE VASSILENKO, 1968, emend.

Mandible lacking molar, with mandibular palp (Group I); pereopods 3-5 fully segmented or reduced; gills on pereonites 2-4, rarely 3-4; abdomen of single reduced article. Two subfamilies:

Phtisicinae Vassilenko, 1968, emend.

Pereopods 3-5 fully segmented, pereopod 5 rarely reduced. Nine genera: *Hemiproto*, *Metaproto*, *Paraproto*, *Phtisica*, *Protogeton*, *Protomima*, *Protoplesius*, *Pseudoproto*, *Pseudoprotomima*.

Dodecadinae Vassilenko, 1968, emend.

Pereopods 3-5 variably reduced, pereopod 5 of less than 4 articles except for 1 genus. Twelve genera: *Aeginoides*, *Caprellina*, *Caprellinoides*, *Dodecas*, *Dodecasella*, ? *Fallotritella*, *Hircella*, *Liriarchus*, *Peadaridium*, *Pereotripus*, *Prellicana*, *Pseudocaprellina*.

AEGINELLIDAE VASSILENKO, 1968, emend.

Mandible with molar and mandibular palp (Group II); pereopods 3-4 considerably reduced or absent, pereopod 5 occasionally reduced; gills on pereonites 3-4, 1 genus 2-4; abdomen of single reduced article. Two subfamilies:

Aeginellinae Vassilenko, 1968, emend.

Pereopods 3-4 absent, gills on pereonites 3-4 except 1 genus. Seven genera: *Aeginella*, *Aeginina*, *Parvipalpus*, *Proaeginina*, *Protellina*, *Pseudaeginella*, *Thorina*.

Protellinae new subfamily

Pereopods 3-4 absent or number of articles quite reduced, gills on pereonites 3-4. Sixteen genera: *Abyssicaprella*, *Deutella*, *Eupariambus*, *Liropus*, *Luconacia*, *Mayerella*, *Metaprotella*, *Monoliropus*, *Orthoprotella*, *Paraprotella*, *Parvipalpina*, *Protella*, *Protellopsis*, *Pseudoprotella*, *Triliropus*, *Tritella*.

CAPROGAMMARIDAE KUDRJASCHOV AND VASSILENKO,
1966, emend.

Mandible with molar and palp (Group II) or lacking molar (Group II, aberrant), pereopods 3-4 reduced to 1 or 2 articles, gills on pereonites 2-4 or 3-4, abdomen of numerous segments. Two genera: *Caprogammarus*, *Cercops*.

CAPRELLIDAE WHITE, 1847, emend.

Mandible with molar, lacking palp (Group III) except one genus with rudimentary palp; pereopods 3-4 quite reduced or absent; gills on pereonites 3-4; abdomen of single reduced article. Nine genera: *Caprella*, *Eugastraulax*, *Hemiaegina*, *Metacaprella*, *Paracaprella*, *Pariambus*, *Pedoculina*, *Propodalirius*, *Pseudolirius*.

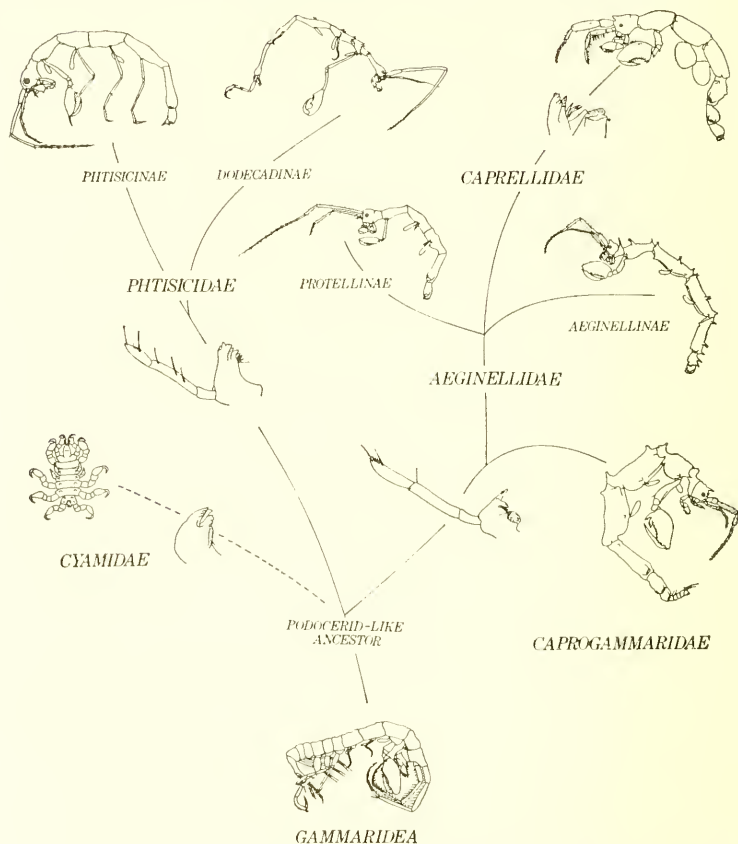


FIG. 1. Familial relationships in the suborder Caprellidea. (Posterior pereopods omitted except where taxonomically significant)

CYAMIDAE WHITE, 1847

Mandible without molar or palp (Group IV), pereopods 3-4 absent, gills on pereonites 3-4, abdomen of single reduced article. Five genera: *Cyamus*, *Isocyamus*, *Neocyamus*, *Platycyamus*, *Syncyamus*.

Incertae Sedis

Six genera: *Aciconula*, *Noculacia*, *Paradeutella*, *Prolipopus*, *Triantella*, *Triperopus*. Mandibles of these six genera have not been described fully; however, all have a 3-segmented mandibular palp and appendages on pereonites 3-4. They, therefore, probably belong to the Protellinae of the Aeginellidae.

Two stocks are apparent within the Protellinae. Four genera bear reduced fifth pereopods, *Eupariambus*, *Liropus*, *Mayerella*, and *Parvipalpina*, while in most of the other genera they are fully segmented. These two stocks may ultimately be placed in separate subfamilies but their separation at this time seems unjustified because of the close similarity of their characters.

With the exception of *Fallotritella*, all Dodecadinae bear reduced fifth pereopods. The mandible of *Fallotritella* differs from that of other Phtisicidae in that the accessory plates are quite small, almost spinelike. It is possible that *Fallotritella* is an example of convergence of the subfamilies Protellinae and Dodecadinae based on the reduction of the molar on a typical Group II mandible.

The mandible of *Cercops* lacks a molar but in other respects resembles the Group II mandible, lacking the accessory plates found in the other genera which have no molar. Because of the segmentation of the abdomen, I have chosen to place it in the Caprogammaridae.

This system of classification shows several evolutionary lines within the Caprellidea. Postulating a podoceridlike ancestor (McCain, 1968) for the Caprellidea, 3 distinct lines emerge (Fig. 1). One line gives rise to the Cyamidae with quite reduced mouthparts, an absence of appendages on pereonites 3-4, and bearing gills only on pereonites 3-4. The Cyamidae are highly specialized parasites which led Barnard (1969, p. 21) to state that the cyamids comprise a fifth major group of Amphipoda. Their separation from the Caprellidea into a fifth suborder deserves consideration by a cyamid specialist. A second line gives rise to the Phtisicidae in which all members lack a mandibular molar and most have 3 pairs of gills. The third line passes through the Caprogammaridae which have large abdomens and typical mandibles reminiscent of the podocerids. Farther along this line are the Aeginellidae with reduced abdomens but typical mandibles. With the loss of the mandibular palp, the third line ends with the Caprellidae. The genus *Paracaprella* is intermediate between the Aeginellidae and the Caprellidae based on its rudimentary palp.

LITERATURE CITED

- BARNARD, J. L. 1969. The families and genera of marine gammaridean Amphipoda. Bull. United States Nat. Mus., vol. 271, pp. vi-535, 173 figs.
- KUDRJASCHOV, V. A. AND S. V. VASSILENKO. 1966. A new family Caprogammaridae (Amphipoda, Gammaridea) found in the North-West Pacific. Crustaceana, vol. 10, pt. 2, pp. 192-198, 4 figs.
- MCCAIN, J. C. 1968. The Caprellidae (Crustacea: Amphipoda) of the Western North Atlantic. Bull. United States Nat. Mus., vol. 278, pp. vi-147, 56 figs.
- VASSILENKO, S. V. 1968. On the question of systematics and the basic lines of development in the family Caprellidae [in Russian]. Doklady Akademii Nauk S.S.S.R. [Proc. Acad. Sci. U.S.S.R.], vol. 183, no. 6, pp. 1461-1464.
- WHITE, A. 1847. List of the specimens of Crustacea in the collection of the British Museum. London. pp. viii-143.